Cont A1

inhibited seriously by an amino acid transferase inhibitor β-chloro-D-alanine, β-chloro-L-alanine or gabaculine, and finally established the present invention by applying said biological material to the production of an optically active amino acid of the amino acid described above.

**Page 2, please replace the paragraph bridging pages 2 and 3 with the following:**

A2

1. a method for producing from one of the optical isomers (optical isomer I) of an amino acid represented by Formula (1):

$$R\text{-}CH(NH_2)\text{-}COOH \quad (1)$$

(wherein R is an optionally substituted C1-C12 alkyl group, an optionally substituted C4-C8 cycloalkyl group or an optionally substituted C6-C14 aryl group) (hereinafter, it is sometimes referred to as the amino acid (1)) the other of the optical isomers (optical isomer II), said method comprising reacting a biological material which has an ability of converting said one of the optical isomers (optical isomer I) to said the other of the optical isomers (optical isomer II), the isomerism being on the basis of an asymmetric carbon atom to which both of an amino group and a carboxyl group are bound and said ability being not inhibited seriously by an amino acid transferase inhibitor β-chloro-D-alanine, β-chloro-L-alanine or gabaculine, with said one of the optical isomers (optical isomer I). (Hereinafter, it is sometimes referred to as the method of the present invention.)

**Page 3, please replace the fourth and fifth paragraphs with the following:**

A3

5. the method according to the above 1, wherein said biological material is one derived from a microorganism belonging to the genus *Arthrobacter*, *Flavimonas*,

Cont A3

*Klebsiella, Nocardia, Pseudomonas, Rhizobium, Saccharopolyspora* or *Streptomyces.*

6. the method according to the above 1, wherein said biological material is one derived from a microorganism classified to *Arthrobacter pascens, Flavimonas oryzihabitans, Klebsiella planticola, Nocardia diaphanozonaria, Pseudomonas chlororaphis, Pseudomonas oleovorans, Pseudomonas oxalaticus, Pseudomonas taetrolens, Rhizobium meliloti, Saccharopolyspora hirsuta* or *Streptomyces roseus.*

**Page 5, please replace the paragraph bridging pages 5 and 6 with the following:**

A4

7. the method according to the above 1, wherein said biological material is one derived from *Arthrobacter pascens* strain IFO12139, *Flavimonas oryzihabitans* strain JCM2952, *Klebsiella planticola* strain JCM7251, *Nocardia diaphanozonaria* strain JCM3208, *Pseudomonas chlororaphis* strain IFO3521, *Pseudomonas oleovorans* strain IFO13583, *Pseudomonas oxalaticus* strain IFO13593, *Pseudomonas taetrolens* strain IFO3460, *Rhizobium meliloti* strain IFO14782, *Saccharopolyspora hirsuta subsp.kobensis* strain JCM9109 or *Streptomyces roseus* strain IFO12818.

**Page 4, please replace the first full paragraph with the following:**

A5

8. a method for improving the optical purity of an amino acid represented by Formula (1):

$$R\text{-}CH(NH_2)\text{-}COON \qquad (1)$$

(wherein R is an optionally substituted C1-C12 alkyl group, an optionally substituted C4-C8 cycloalkyl group or an optionally substituted C6-C14 aryl group), said method comprising reacting a biological material which has an ability of converting one of the optical isomers (optical isomer I) of said amino acid to the other of the optical isomers

(optical isomer II), the isomerism being on the basis of an asymmetric carbon atom to which both of an amino group and a carboxyl group are bound and said ability being not inhibited seriously by an amino acid transferase inhibitor β-chloro-D-alanine, β-chloro-L-alanine or gabaculine, with said amino acid represented by Formula (1).

**Page 5, please replace the fourth paragraph with the following:**

A biological material which can be employed in the present invention is a biological material which has an ability of converting one of the optical isomers (optical isomer I) of the amino acid (1) to the other of the optical isomers (optical isomer II), the isomerism being on the basis of an asymmetric carbon atom to which both of an amino group and a carboxyl group are bound and the ability being not inhibited seriously by an amino acid transferase inhibitor β-chloro-D-alanine, β-chloro-L-alanine or gabaculine (hereinafter sometimes referred to as the biological material of the present invention.

**Page 7, please replace the paragraph bridging pages 7 and 8 with the following:**

A preferred example of the biological material of the present invention may be a material derived from a microorganism belonging to the genus *Arthrobacter*, *Flavimonas*, *Klebsiella*, *Nocardia*, *Pseudomonas*, *Rhizobium*, *Saccharopolyspora* and *Streptomyces*, preferably a material derived from a microorganism classified to *Arthrobacter pascens*, *Flavimonas oryzihabitans*, *Klebsiella planticola*, *Nocardia diaphanozonaria*, *Pseudomonas chlororaphis*, *Pseudomonas oleovorans*, *Pseudomonas oxalaticus*, *Pseudomonas taetrolens*, *Rhizobium meliloti*, *Saccharopolyspora hirsuta* and *Streptomyces roseus*, and typically a material derived from *Arthrobacter pascens* strain

IFO12139, *Flavimonas oryzihabitans* strain JCM2952, *Klebsiella planticola* strain JCM7251, *Nocardia diaphanozonaria* strain JCM3208, *Pseudomonas chlororaphis* strain IFO3521, *Pseudomonas oleovorans* strain IFO13583, *Pseudomonas oxalaticus* strain IFO13593, *Pseudomonas taetrolens* strain IFO3460, *Rhizobium meliloti* strain IFO14782, *Saccharopolyspora hirsuta subsp.kobensis* strain JCM9109 and *Streptomyces roseus* strain IFO12818.

**Page 16, please replace the paragraph bridging pages 16 and 17 with the following:**

A 500 mL Sakaguchi flask containing 100 ml of a sterilized medium (pH 7.0) containing 1.0 % (w/v) glycerol, 0.2 % (w/v) polypeptone (Nihon Pharmaceutical Co., Ltd.), 0.3 % (w/v) meat extract powder (Kyokuto Pharmaceutical Ind., Co., Ltd.), 0.3 % (w/v) yeast extract (Difco), 0.1 % (w/v) dipotassium phosphate, 0.1 % (w/v) mono potassium phosphate, 0.03 % (w/v) magnesium sulfate heptahydrate was inoculated with 1 mL of a culture of *Nocardia diaphanozonaria* strain JCM3208 which had previously been cultivated in a medium of the similar composition, and incubated at 30°C for 3 days with a reciprocal shaking. From this culture, cells were collected by centrifugation (10000 g, 10 minutes), which was combined with 10 ml of 100mM potassium phosphate buffer (pH 7.0) to form a cell suspension again, which was centrifuged (10000 g, 10 minutes) to obtain wet cells. The wet cells thus obtained were suspended in 10 mL of 100mM potassium phosphate buffer (pH 7.0) to obtain a cell suspension. 50 mg of D-p-chlorophenylalanine was dissolved in 45 mL of an aqueous solution (pH 7.0) containing 0.15 % (w/v) mono potassium dihydrogen phosphate, 0.15 % (w/v) disodium hydrogen mono phosphate, 0.02 % (w/v) magnesium sulfate

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heptahydrate, 0.001 % (w/v) ferrous sulfate heptahydrate, 0.001 % (w/v) zinc sulfate heptahydrate, 0.001 % (w/v) manganese sulfate trihydrate, 0.001 % cobalt chloride hexahydrate and 0.0005 % (w/v) yeast extract, to which 5 ml of the cell suspension described above was added and the reaction mixture was kept at 30°C for 74 hours with stirring using a magnetic stirrer at 1000 rpm. Subsequently, an aliquot of the reaction mixture was taken and centrifuged to remove the cell and the supernatant obtained was subjected to HPLC to ensure that L-p-chlorophenylalanine at the optical purity of 100 % e.e. was obtained at 79 yield.

**Page 20, please replace Table 1 with the following:**

A9

| Biological material | Incubation time (h) | % L-form | % D-form |
|---|---|---|---|
| *Arthrobacter pascens* strain IFO12139 | 72 | 64 | 36 |
| *Flavimonas oryzihabitans* strain JCM2952 | 72 | 90 | 10 |
| *Klebsiella planticola* strain JCM7251 | 48 | 61 | 39 |
| *Pseudomonas chlororaphis* strain IFO3521 | 72 | 94 | 6 |
| *Pseudomonas oleovorans* strain IFO13583 | 48 | 89 | 11 |
| *Pseudomonas oxalaticus* strain IFO13593 | 48 | 75 | 25 |
| *Pseudomonas taetrolens* strain IFO3460 | 72 | 90 | 10 |
| *Rhizobium meliloti* strain IFO14782 | 48 | 84 | 16 |
| *Saccharopolyspora hirsuta subsp.kobensis* strain JCM9109 | 72 | 67 | 33 |
| *Streptomyces roseus* strain IFO12818 | 48 | 96 | 4 |

**Page 20, please replace Table 2 with the following:**

A10

| Biological material | Incubation time (h) | % L-form | % D-form |
|---|---|---|---|

| | | | |
|---|---|---|---|
| [Arthrobacter pascens] *Arthrobacter pascens* strain IFO12139 | 72 | 100 | 0 |
| *Flavimonas oryzihabitans* strain JCM2952 | 72 | 100 | 0 |
| *Klebsiella planticola* strain JCM7251 | 48 | 100 | 0 |
| *Pseudomonas chlororaphis* strain IFO3521 | 72 | 100 | 0 |
| *Pseudomonas oleovorans* strain IFO13583 | 48 | 100 | 0 |
| *Pseudomonas oxalaticus* strain IFO13593 | 48 | 100 | 0 |
| *Pseudomonas taetrolens* strain IFO3460 | 72 | 100 | 0 |
| *Rhizobium meliloti* strain IFO14782 | 48 | 100 | 0 |
| *Saccharopolyspora hirsuta subsp.kobensis* strain JCM9109 | 72 | 100 | 0 |
| *Streptomyces roseus* strain IFO12818 | 48 | 100 | 0 |

**Page 22, please replace the paragraph bridging pages 22 and 23 with the following:**

A 500 mL Sakaguchi flask containing 100 ml of a sterilized medium (pH 7.0) containing 1.0 % (w/v) glycerol, 0.2 % (w/v) polypeptone (Nihon Pharmaceutical Co., Ltd.), 0.3 % (w/v) meat extract (Kyokuto Pharmaceutical Ind., Co., Ltd.), 0.3 % (w/v) yeast extract (Difco), 0.1 % (w/v) dipotassium phosphate, 0.1 % (w/v) potassium mono phosphate, 0.03 % (w/v) magnesium sulfate heptahydrate was inoculated with 1 mL of a culture of *Nocardia diaphanozonaria* strain JCM3208 which had previously been cultivated in a medium of the similar composition, and incubated at 30°C for 2 days with a reciprocal shaking. 80 ml of this culture was subjected to centrifugation (10000 g, 10 minutes) to collect wet cells. The collected wet cells were washed twice with 80 ml of 100mM potassium phosphate buffer (pH 7.0) and the wet cells thus obtained was suspended in 4 mL of 100mM potassium phosphate buffer (pH 7.0) to obtain a cell suspension.

**Page 24, please replace the first paragraph with the following:**

The reaction was performed similarly as in Example 6 except for using each of

the microorganisms shown in Table 7 instead of *Nocardia diaphanozonaria* strain JCM3208. The results are shown in Table 7.

**Page 24, please replace Table 7 with the following:**

| Biological material | Relative value (%) | | | |
|---|---|---|---|---|
| | Absence | β-Chloro-D-alanine | β-Chloro-L-alanine | Gabaculine |
| *Flavimonas oryzihabitans* JCM2952 | 100 | 144 | 92 | 105 |
| *Klebsiella planticola* JCM7251 | 100 | 90 | 92 | 102 |
| *Pseudomonas chlororaphis* IFO3521 | 100 | 85 | 102 | 72 |
| *Pseudomonas oleovorans* IFO13583 | 100 | 91 | 94 | 87 |
| *Pseudomonas taetrolens* IFO3460 | 100 | 84 | 87 | 75 |
| *Rhizobium meliloti* IFO14782 | 100 | 108 | 96 | 88 |

**Page 24, please replace the second paragraph with the following:**

The reaction was performed similarly as in Example 6 except for using each of the microorganisms shown in Table 8 instead of *Nocardia diaphanozonaria* strain JCM3208 and except that the reaction time was 24 hours (when the reaction was equilibrated). The results are shown in Table 8.

**Page 24, please replace Table 8 with the following:**

| Biological material | Relative value (%) | | | |
|---|---|---|---|---|
| | Absence | P-Chloro-D-alanine | P-Chloro-L-alanine | Gabaculine |
| *Arthrobacter pascens* IFO12139 | 100 | 83 | 84 | 96 |
| *Pseudomonas oxalaticus* IFO13593 | 100 | 124 | 91 | 105 |
| *Saccharopolyspora hirsuta* JCM9109 | 100 | 99 | 101 | 97 |
| *Streptomyces roseus* IFO12818 | 100 | 114 | 95 | 97 |